

### Claims

1. Method for reprocessing used plastic containers, especially PET bottles, comprising the steps:
  - a) analyzing (102, 202), the degree of contamination of the plastic,
  - b) determining (106, 221, 223) decontamination process parameters as a function of the degree of contamination found in step a), and
  - c) controlled decontamination (112) of the plastic according to the decontamination process parameters thus determined.
2. Method according to Claim 1, characterized in that in step a), contaminants present in the plastic and their respective concentrations are determined.
3. Method according to Claim 2, characterized in that the contaminants detected are combined into contaminant groups.
4. Method according to one of Claims 1 through 3, characterized in that in step b) a process temperature adapted to the degree of contamination is determined as a decontamination process parameter.
5. Method according to any one of Claims 1 through 4, characterized in that in step b) a process time that is adapted to the degree of contamination is determined as a decontamination process parameter.
6. Method according to any one of Claims 2 through 5, characterized in that in step b) the degree of contamination of the plastic is

determined by adding up the concentrations of the contaminants or contaminant groups detected.

7. Method according to Claim 6, characterized in that the individual contaminants or contaminant groups are assigned a weighting factor as a function of an intensity of contamination corresponding to that contaminant or contaminant group, and the degree of contamination is obtained from the weighted sum of the concentrations of the contaminants or contaminant groups detected.
8. Method according to any one of Claims 2 through 5, characterized in that in step b) the decontamination process parameters are determined as a function of the concentrations of a predetermined number of contaminants or contaminant groups.
9. Method according to any one of Claims 2 through 5, characterized in that in step b), the decontamination process parameters are determined independently of one another for at least two, especially all the contaminants or contaminant groups detected, and in step c) the decontamination process parameters for which the profile of decontamination requirements is highest are used.
10. Method according to any one of Claims 1 through 9, characterized in that in step b) the decontamination process parameters are determined as a function of regulable threshold values (SW1, SW2).
11. Method according to any one of Claims 1 through 10, characterized in that step c) is performed only when the degree of contamination exceeds a predetermined first threshold value (SW1).
12. Method according to any one of Claims 1 through 11, characterized in that the plastic is re-shredded (111) between steps b) and c) if the

degree of contamination exceeds a predetermined second threshold value (SW2).

13. Method according to any one of Claims 1 through 12, characterized in that instead of steps b) and c), the plastic is sorted out and removed (105) when the degree of contamination exceeds a predetermined third threshold value (SW3).
14. Method according to any one of Claims 1 through 13, characterized in that in step b) the decontamination process parameters are determined (107) with the help of a numerical model and the degree of contamination is a parameter of the model.
15. Method according to any one of Claims 1 through 13, characterized in that in step b) the decontamination process parameters are determined by comparing the degree of contamination with a predetermined data record.
16. Method according to any one of Claims 1 through 15, characterized in that between steps a) and b), the plastic is added to one of at least two partial quantities as a function of the degree of contamination, and in step b), decontamination process parameters are determined (221, 223) for each of the at least two partial quantities, and in step c), the decontamination is performed (222, 224) for each of the partial quantities according to the decontamination process parameters thus determined.
17. Method according to any one of Claims 1 through 16, characterized in that the degree of contamination of the decontaminated plastic is determined and the value thus determined is optionally used to adjust the decontamination process parameters.

18. Device for performing the method according to any one of Claims 1 through 17, comprising:
  - a system (305) for analyzing the degree of contamination of the plastic
  - a system (306) for determining decontamination process parameters as a function of the degree of contamination thus detected, and
  - a system (307) for controlled decontamination of the plastic according to the decontamination process parameters thus determined.
19. Device according to Claim 18, characterized in that the system (305) for performing the analysis comprises a mass spectrometer.
20. Device according to Claim 19, characterized in that the mass spectrometer is configured so that the degree of contamination is determined essentially in real time.